Raleigh Amateur Radio Society, Inc.

CLUB CALL: W4DW

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LEADING EDGE

SHERMAN STARNES
W4TZU

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In December, Leading Edge reported that some "interesting possibilities" for future amateur radio satellites were being explored, and at that time I speculated that geosynchronous orbits might be involved. It has now been confirmed that two possible launch opportunities are being studied, both involving a ride all the way geosynchronous orbit altitude in the 1983 to 1984 time period. Furthermore, the weight allowances for each are tremendous, one at 1200 pounds and the other at 4400 pounds. It taxes the imagination to contemplate what kind of equipment could be sent into space that would utilize such weight allowances. AMSAT officials continue to explore these avenues with the Defense Department here and the European Space Agency abroad.

The slip in the Phase 3B launch reported last month is even greater than anticipated. It now appears that September 30 is the earliest possible launch date. Meanwhile, work continues on the spacecraft here in the U.S. and in Europe.

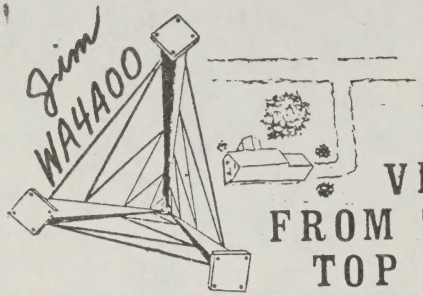
The expected revelation about the Russian satellites RS-3 and RS-4 failed to materialize on Lenin Day, April 22, or May Day. The Soviets put on an "activity week" the last week of April but it was not well publicized and no great increase in activity on RS-5 through RS-8 was in evidence.

It seems that snakes have been discovered in outer space. At least, the British satellite, UOSAT OSCAR 9 seems to be snakebit. It now appears that the 40 kev radiation detector was damaged at launch. All other experiments are in good shape. However, a ground control computer software bug has resulted in loss of control of the spacecraft. The satellite is equipped with beacons on two meters and 70 cm. These same bands are used to command the spacecraft and experiments. The plan was to command the bird on one band and have it transmit telemetry on the other. Through a program problem the ground control station activated the telemetry beacons on both bands and now both command receivers are desensed. Estimates of the effective radiated power from a ground station needed to break through range up to a megawatt. Discussions with some of the better-equipped moonbounce operators are under way to utilize the facilities of one of their stations to overcome the beacon on one band and get a command into the receiver.

In a continuing effort to highlight some state-of-the-art activities besides those concerning amateur radio satellites, I planned this month to report on one North Carolina amateur's operation using Earth's natural satellite, the Moon. At the Charlotte Hamfest in March, I again had the pleasure of talking with Dexter McIntyre, WA4ZIA, of Locust. Look for the article about him elsewhere in this issue.

EXECUTIVE EDITOR: FRANK C. WEISS, KY4W

PRODUCTION EDITOR: ANN M. BRADLEY, WA4APK



VIEW FROM THE TOP

Careful, Dummy! "Local man electrocuted while putting up TV antenna. City resident killed in fall from tree. Teenager dies in fall from roof." Whether you are putting up a simple dipole between two trees or installing complex arrays on a 300 ft. tower, there is one necessary thing common to the erection of all antennas--safety! The installation of any antenna or its supporting structure should be done in a safe, sane manner. The use and moving of metallic objects near power lines (insulated or not) will lead to shocking results if not done so with care. Overexertion of older people trying to recapture their youth or impress someone with their Tarzan like tree work, or ability to balance on the peak of a roof can and does lead to broken bones, bruised muscles (and pride), heart attacks and/or death if not approached in a sensible manner. The erection of towers and antennas upon them by inexperienced personnel is one of the better ways to court total disaster and death. Murphy and his laws are still with us. Bolts, nuts, clamps, tools, etc. can and will fall from any height greater than that of the tallest head in the ground crew not wearing a hard hat. (Murphy's Law-subpart 121)

In the Raleigh area there are a lot of antennas in the air. Hopefully they all got up without adverse incident. The antenna parties I have attended in the past several years seem to have evolved into a safe bunch (new and old) who are concerned with doing the job safely. Let's discuss personal safety. Very few of the people on top of the tower have anything fall on them--hard hats are a must for the ground crew.

I'm sure you have seen, at one time or another how deep in the ground, a bolt or screwdriver can bury itself when dropped from a great height. Don't let it bury itself in your skull. Hard hat or not, no one should be near the bottom of the tower unless actually necessary. For the tower climbers, safety belts and safety straps (not leather because they dry-rot). You'll need a safety lanyard plus enough experience to work above people without a rain of tools and parts falling from his hand --that reminds me--I'm getting too old for that work.

Think about it fellas--get some help--talk it out--plan for the easiest and best method---and above all---DO IT WITH SAFETY!

The following ad appeared in "Ham Radio." I felt it was worth reprinting here with the permission of UNR-Rohn. If you missed it before, don't fail to read it now--and pay heed to the advice. Don't let an antenna party end in tragedy! 73--Jim,WA4AOO

WARNING

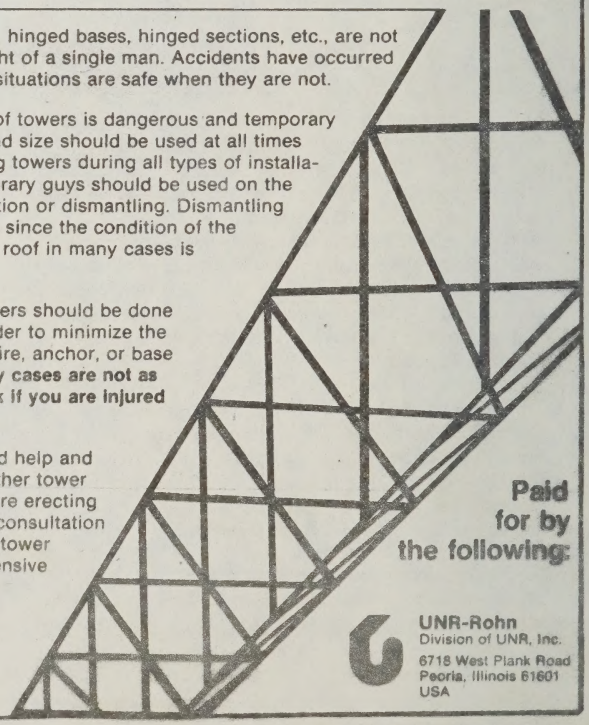
SAVE YOUR LIFE OR AN INJURY

Base plates, flat roof mounts, hinged bases, hinged sections, etc., are not intended to support the weight of a single man. Accidents have occurred because individuals assume situations are safe when they are not.

Installation and dismantling of towers is dangerous and temporary guys of sufficient strength and size should be used at all times when individuals are climbing towers during all types of installations or dismantlings. Temporary guys should be used on the first 10' or tower during erection or dismantling. Dismantling can even be more dangerous since the condition of the tower, guys, anchors, and/or roof in many cases is unknown.

The dismantling of some towers should be done with the use of a crane in order to minimize the possibility of member, guy wire, anchor, or base failures. **Used towers in many cases are not as inexpensive as you may think if you are injured or killed.**

Get professional, experienced help and read your Rohn catalog or other tower manufacturers' catalogs before erecting or dismantling any tower. A consultation with your local, professional tower erector would be very inexpensive insurance.



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LET'S TALK DIGITAL de AA4L

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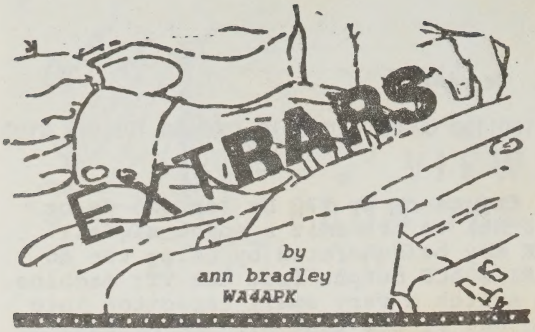
Audio Frequency Shift Keying - or AFSK - is normally used by amateur stations to transmit RTTY signals on the VHF bands. This technique calls for modulating the transmitter with a certain audio frequency to represent a MARK condition, and shifting the audio tone to some other frequency to represent the SPACE condition. Either frequency or amplitude modulation may be used, with FM being by far the most common. One simply plugs one's teletype machine or digital terminal into a TU or terminal unit, which is in turn plugged into the mike jack and phone jack of an ordinary FM transceiver. The function of the TU is to convert the DC mark and space signals from the TTY into audio tones, and to convert the received audio tones into mark and space DC signals for the TTY. The most popular amateur TU's use a 2125 Hz tone for mark, and 2295 Hz tone for space. Hence the frequency shift is 170 Hz. A shift of 850 Hz is used occasionally. This is a World War 2 military standard, which was once widely used on the ham bands. Some commercial circuits use a 425 Hz shift, and some amateur equipment has this capability, primarily for the purpose of monitoring outside the ham bands. A few ham computer enthusiasts are using BELL-compatible modems on VHF. These modems use a shift of 100 Hz and oddball audio tones. A modem is the equivalent of a TU, designed for use on commercial landline telephone circuits. FCC rules establish no standards, other than the requirements that the highest modulating tone may not exceed 3000 Hz, and the shift may not exceed 900 Hz.

The use of AFSK is not permitted on the HF bands. On these frequencies, where most RTTY operations are conducted, Frequency Shift Keying, or FSK is used. In FSK, a MARK signal is represented by an unmodulated RF carrier. This carrier is shifted down in frequency by 170 Hz (or 425 Hz or 850 Hz) to transmit a space signal. FSK may be generated by using the dc MARK/SPACE output from the TTY machine to switch a very small capacitor into and out of the tank circuit of the transmitter VFO. FSK may be received on a conventional communications receiver, which has been modified by the addition of an FM discriminator stage plus some DC amplifiers. After all, FSK is a special case of FM.

However, most HF RTTY stations on the air these days transmit and receive FSK by the use of a TU, which generates and decodes audio tones, in conjunction with a SSB transceiver. A review of SSB theory shows that if we alternately inject audio tones of 2125 Hz (mark) and 2295 Hz (space) into the mike jack of a SSB xcvr adjusted to transmit on lower sidebands, we will generate the FSK signal described above. The MARK carrier will be 2125 Hz lower than the dial reading but this can be solved by mental arithmetic. The xcvr product detector will convert the incoming FSK signal into audio tones, which can be converted into DC mk/sp signals for the TTY machine by the receive portion of the TU. While this method is somewhat inferior technically to the older systems, it works well enough for most purposes.

Furthermore, it has the advantage that no modifications to the normal station equipment are required. Just buy, build, or beg a TU, plug it in, and away you go. A word of caution -- SSB xcvr finals and power supplys are simply not designed for this type of service, which is equivalent to continuous key-down CW. The typical "200 watt" xcvr must be throttled back to 25 to 50 watts output to survive. This is adequate power for most purposes.

More next month -- 73 de AA4L



Don't fail to read the Roanoke Division Section Activities in May QST. More nice comments by Ian Black, WD4CNR, about RARS News. I vote we make Ian head of the Newsletter publicity department.

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Jack Brookshire, KA4YGU, has been pretty busy lately. First a trip to Norfolk where he passed the written test and upgraded to Technician (he arrived too late for the code test). Not to be outdone, he then hied himself off to Wilmington where he upgraded to General. That's moving on, Jack! Nice going!

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Congratulations also to Bill Carper, N4FPB, who has upgraded to General and Bob Owens, formerly KA4KST--now N4GQO, who upgraded to Technician.

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Just this minute got word that Annette Rogers, XYL of Lee, WB4DRJ, received that precious postcard that says "PASSED." That's great, Annette! Hopefully by next column, we'll be able to tell the new call sign.

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Marty surprised us all with a brand new Extra call--NY4H. There have been oodles of suggestions for phonetics--too numerous to list. My favorite came by way of an anonymous phone call. Wish I knew who that was?!

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RARS is happy to welcome four new members--Roger Smith, K4PFK; Terry Raiter; Jim Weaver; and Jim's son, Jason,KA4ZQU. We're especially proud of Jason--eleven years old. Jason may very well be the youngest RARS member of all time.

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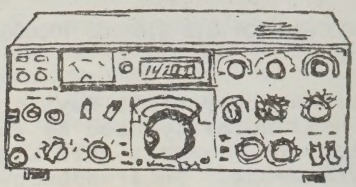
Visitors at the May meeting were James Lyons of Wilson; Ed Paris, WA4AAV; Merril Moyer, KD4HS; Jeff Dalton, KAØEEH; and Herb Forbes, N4BXF--all of Raleigh. It was very nice to have you join our meeting. Hope you'll visit again soon. We'd love to have you as members of RARS.

I'M LØØKING UP



Thanks to the contributions of RARS regular authors and those of our occasional authors, the previous two issues have been full up. The June issue does'nt have a center fold photo spread because the space is used to include the latest RARS membership roster complete with new errors. Notice that the order is by call suffix, just like the big 'CALLBOOK'. You may wish to keep your old roster as a cross reference list since it's in last name sequence.

RARS order for a new two meter machine has been confirmed by Aerotron Inc. I wonder if a new I-Der is on order also, else the club call will have to change to W4DW/RPTTTTTTT.

A 10 Meter Net is starting up. Sunday evening at 7:30 local time and 28,575 MHz are the stats.

It might be a good place for beginners like me to get 10-10 numbers for membership.

HF operations here have come to a halt. Seems like the TS-830S VFO has frequency jitters like a drunk with a hangover. Acts like noise is getting into the RIT/XIT control voltage producing the FM. Didn't even get a good chance to try out the new 500 cycle CW filter added in the 455 IF. The good news is that 16 screws get the covers loose. The bad news is that I can't see the components without a good strong magnifier. Any other experience with VFO noise modulation fixes would be welcomed. See U at field day.

Keep Looking Up!

=======73, Frank, KY4W

remember when?

TRAIN TRIP ADVENTUROUS

A lost boy, a lost hat, and the sound of a steam engine whistle heard by a ham in Ontario, Canada were some of the highlights in the life of special ham station NR4HS aboard a train that carried nostalgic travelers into yesteryear August 15.

Southern Railway Steam Engine 4501, built in 1911, carried a trainload of railroad buffs to Chocowinity and back to Raleigh with much memory-provoking huffing and puffing and long musical blasts of its lonesome steam whistle.

The trip was sponsored by an area chapter of the National Railroad Historical Society. The special station call aboard the train took its letters from the society, NR4HS.

The train left Raleigh about 8:00 a.m. The lost boy adventure began in Farmville. The eight-year old was with his parents at the station to see some friends off on the train, and after the train pulled out the parents realized their son was not around. The train had made a stop in Greenville and was pulling out when local police stopped it and told railway officials the boy's parents believed him to be on the train. There was a search, much calling of the boy's name, but no boy. The train departed.

A short way down the track, the boy appeared, enjoying his train ride immensely. Amateur station operators contacted a ham in the vicinity of Farmville who went to the railroad station and, using the description the boy gave of the family car, found his parents and told them their son was safe aboard the train and having a good time.

Presumably, the good time continued until the train returned to Farmville. But that part of the adventure does not concern ham radio.

During the trip eastward to Chocowinity, a young NRHS member was leaning outward over the side of a railway car when his hat blew off near a rural crossing in a wooded area near Stantonsburg just southeast of Wilson. On the hat were two pins that were of great sentimental value and irreplacable. One of the pins was a 25-year service pin from the Atlantic Coast Line Railroad that had been given to his grandfather. On the return trip, he spotted the hat still lying on the roadbed. Amateur operators contacted a Wilson ham, K4PRJ, who was reared in the Stantonsburg area. He immediately went directly to the spot, recovered the hat and took steps to have it returned to its owner.

Somewhere along the way, one of the NR4HS operators contacted an amateur operator in Ontario, Canada on voice. He stuck the microphone out the window during a blast of the steam whistle, and the Canadian ham gleefully acknowledged he heard it.

The train arrived back in Raleigh about 8:00 p.m. with tired and happy people aboard, many of them already making plans for next year.

GETTING THE CALL SIGN

The FCC must authorize all special call signs and RARS, planning for the railroad trip behind Steam Engine 4501, submitted a timely application requesting the special call, NR4HS for a ham station aboard the train. The rail trip was scheduled for August 15, Saturday.

Friday, August 13 came. No letter from the FCC authorizing the special call. Saturday, August 14, the final mail--still no letter. Panic began to set in.

At 10.00 p.m., RARS president Chuck Littlewood, W4RUH, and members Lynn Pendleton, K4NYV, and Joe Stevens, WA4JZX, of Elizabeth City, huddled to decide what action to take. Joe suggested calling the watch officer at the FCC in Washington, D.C. Lynn got the watch officer on the telephone. Chuck explained to the officer what the situation was. The officer called a member of the commission who gave verbal authorization for use of the special call. The commissioner also relayed through the watch officer this message along with the verbal authorization: "If you get something in the mail saying you can't do it, call me."

The written authorization for the NR4HS call arrived a week after the trip.

REPRINTED FROM RARS NEWSLETTER
ISSUE 84 OCTOBER, 1976

CAROLINA MOON (bounce)

Sherman Starnes, W4TZU

What attracted you to Amateur Radio? What keeps you in? If these questions were asked of all amateurs, hundreds of thousands would answer DX, ragchewing, or two-meter FM. Tens of thousands would say RTTY or slow-scan TV. A few thousand would respond with OSCAR satellites. Only a few hundred, however, could say they have accepted the challenge of communicating by lunar reflection. One of this small number is Dexter McIntyre, WA4ZIA, of Locust, NC.

No other amateur radio endeavor, perhaps, offers the technical challenge of moonbounce, Earth-Moon-Earth (EME), or whatever label you choose to attach to it. The history of amateur radio moonbounce goes back to 1953 when W4AO and W3GKP received echos of their 144 mHz signal from the moon. It wasn't until 1960, and on 1296 mHz, that W1BU and W6HB made the first two-way EME contact. Today the technical requirements for lunar communications are well established. They are , basically, maximum legal power, the ultimate in low-noise receiver performance, a large, high-gain antenna which can be aimed accurately, and the constitution to work with unbelieveably weak c.w. signals. In conversations at the Charlotte Hamfest and in a long 75 meter QSO, Dexter described his attempts to meet these requirements.

The WA4ZIA signal starts with a Yaesu FT-101ZD transceiver driving a 432 mHz. Microwave Modules transverter with its output attenuated to two watts. This is applied to a modified Motorola T-44 transmitter strip which produces up to 30 watts output, only 15 watts being used. This is adequate to drive what is commonly known as a K2RIW kilowatt amplifier. The amplifier was designed by Dick Knadle, K2RIW, and described originally in QST for April and May of 1972. It offers up to 70 percent efficiency, an important feature when you're after every decibel of gain. The power out of the amplifier is monitored with a Micromatch relative power meter before going up the tower through about a hundred feet of heliax cable. The transmitted signal goes through several relay contacts to protect the receiving preamplifier before terminating in an array of four ninteen element antennas also designed by K2RIW.

The receiving preamplifier is a Lunar Electronics Model PAG-432, employing a field-effect transistor based on gallium-arsenide rather than silicon, commonly called a GaAs FET. The preamp has 16 dB of gain with an extremely low noise figure. Its sensitivity is phenomenal. The relays that switch it in and out for transmit and and receive must provide tremendous isolation for the GaAs FET when transmitting. Dexter says the same isolation must be provided when the system is turned off because a lightning stroke several miles away could destroy the GaAs FET. As he swings the antenna in azimuth he can detect the difference in temperature between highways and the surrounding terrain. The GaAs FET preamp is followed by another amplifier using a more ordinary bi-polar transistor which provides an additional 15 dB of gain. Both these amplifiers are mounted right on the antenna. A run of RG-213 brings the signal to the receive side of the transverter rather than using the transmit heliax. Finally, the received signal comes out on the FT-101ZD.

The four-yagi antenna array has a horizontal beamwidth of five degrees and a vertical beamwidth of seven degrees, requiring that it be fully steerable and aimed accurately. When the moon is visible, once the array is aimed properly, moonlight shines down a tube on the array and strikes a photocell. An automatic control system then keeps the tube aligned so that light from the moon strikes the photocell. The length of the photocell tube was calculated to provide a tracking accuracy of two degrees. When the moon is obscured by clouds or during daylight, Dexter controls the array manually using data generated by his TRS-80.

For all his effort, Dexter has never heard his own call echoed from the lunar surface, his big limitation being the four-yagi antenna array. His five contacts have been with stations that are particularly well equipped in the antenna department: K3NSS, an eighty seven foot dish; DL9KR, a sixteen yagi array; K2UYH, a twenty eight foot dish; I5MFH, a ten meter (33 feet) dish; and VE4MA, another sixteen yagi array. Stations that hear WA4ZIA say it has the strongest signal of any station equipped with a four-

NET NEWS

THE JFK NET
by Tom Graham, WB4WII
Net Manager

Earlier this year, this column discussed the present set-up, the purpose, the aims, and the activities of the JFK Net. Now let us look at its founding and the early days of the net, as far as we have been able to ascertain.

The net was activated during the early days of the Vietnam conflict. Its purpose was to handle traffic into and out of Southeastern Asia for service personnel stationed there.

Its headquarters was at the John F. Kennedy Center for Special Warfare at Fort Bragg, and operated there from a MARS station. Have not been able to get the date of its organization. Many of you "old timers" are no doubt more familiar with it than we are, as we were not operating back then.

We are told the net performed a yeoman service until the end of the conflict, and then, its reason for being no longer existing, it was ready to disband.

But a group of interested operators got together and decided to continue the net. By-laws were written, a procedure guide was formulated, and the net was again in action.

WB4IFC, Sam Dunn, of Jacksonville, was kind enough to give us a roster of the charter member certificates, the name on that being the "John F. Kennedy for Special Warfare Single Side Band Net." As time passed, the name was shortened to the "JFK Net."

Many calls on that original roster are still heard, some few are "silent keys," and some have drifted away.

But the net is still very active nightly on 3923 at 6:30 p.m. You are invited to join us--believe you'll like it.

CAROLINA MOON (bounce)
(continued)

antenna array. One of Dexter's next projects is to increase the array to eight yagis and optimize the spacing between antennas within the array. Down the road also are plans to tackle EME on two meters.

Dexter is active on a 70 cm. net which meets at nine p.m. each Wednesday. Checkins range from New York to Florida. Nets concerning moonbounce also meet on 14345 kHz. at eleven a.m. on Saturday and Sunday. Other North Carolina hams who are or have been active on EME are K4PHV of Mocksville, WB4EXW of Kernersville, and until he became a silent key a few years ago, Bill Smith, K4QL, ex-W3GKP, who collaborated on the 144 mHz. echoes in 1953.

I'm sure RARS will join me in expressing appreciation to Dexter for providing us with the material for this article and we wish him every success in his continuing efforts.

PROGRAM FOR JUNE MEETING

The June meeting promises to be an entertaining one. Chuck Littlewood, K4HF, will give a slide presentation on the Dayton Hamfest and then Marty, NY4H will show us slides of the DX-pedition on Campbell Island. Both programs are interesting and informative. Mark your calendar--RARS meeting, June 2!

RARS EXTENDS CONGRATULATIONS to the new 1982-83 officers of W4ATC at NCSU.

President-Susan Langley, WA4AKB
V. President-Bryan Sickels, WD4IOA
Sec. - Treas.-Robert Clark, NJ4J
VHF Director-David Redfearn, N4ELM
Technicians- Doug Hall
David Redfearn

FIELD DAY NIGHTMARES
or
FIRST CONTACT WITH "LOVE"

The day I had dreaded had come. It was Saturday, June 27, 1981--the start of FIELD DAY! I had opened my mouth so wide that I just had to stick my foot into it. There was no out for me. I had to go on the air. Not only was it to be my first Field Day - it would also be my first contact! Hope-a-hope-a-hope that at least one other novice shows up. After all, if "misery loves company" so does fright.

My O.M. (KY4W) and I arrived at the Faculty Club early. As more people arrived, everyone got busy setting up the 3 stations. I spent my time taking pictures for posterity. Everyone was so friendly, making me feel a part of the group. I soon found a few things I could do to help out without getting in the way. Before long the three stations were up and there was a lot of time before the action was to start. Oh boy! Could it be that they had forgotten about my big mouth? No other novices had arrived. In fact, there weren't any technicians there either.

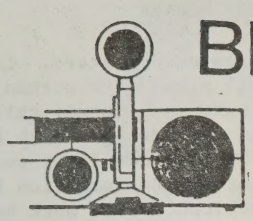
Someone handed me a radio and said that I should get busy with the novice station. Somehow the station was all set up and Jim, WA4AOO, sat down and explained all he could about the rig and I started to become excited. "Hey! I might pull this thing off after all." A novice station must use a novice call, and since I was the only one present, my call was to be used and the contacts could go into my Log Book. This made me very happy.

Wally, W4PRQ, wanted to be my first contact, and I wanted to oblige, but we first had to let Wally know. The hour grew close to starting time. Suddenly I heard my call! It was Wally. I got so excited that I promptly forgot my code, how to make contact and everything I had been taught. Thanks to Joe Love, KB4RR, who stayed with me through most of my starting ordeal, I was finally able to finish my First Contact - and the second - and the third - and the fourth. The person giving me aid and the guts to continue kept changing. I'm not certain just who they all were. I only know that they all had the patience of Job. Soon about two hours were past and I found myself alone. I was sending "CQ FD" and heard an answer. WA4AOO had gone home just to contact me. I would hate to tell you how badly I screwed up his call. (I always did get my O's and S's mixed up!) However, he too had patience with me and I finally realized just who was on the other end of the key. This was my first contact without someone sitting by my side, and even though it took a bit of time, I'm quite proud of it.

Frank and I went home for a few hours sleep. We arrived back at about 4 AM. Frank had brought a lamp along so that I could see what I was doing. "Thanks a lot!" I wasn't sure I wanted to be there in the dark. However, I wasn't given a choice. He plugged in the lamp, warmed up the rig and left me there--alone--in the dark--with only my radio for company. It was cold and eerie. I don't think that I could see more than five feet away from the table. I expected bugs, and got very few. And the questions I found in my mind! "Do snakes come out at night? Are they attracted to light? What kind of animals are in these woods? What was that sound I heard over in the brush?" I was stuck where I was too. My light was plugged in and the cord wasn't long enough to reach my nearest neighbors. (Icould barely see them!) I did not have a flashlight. It was black out there The moon was down. I finally decided that the best thing for me to do was to get with it and try to make some sense out of the sounds I was hearing coming out of the rig. So, I set out -.- --.- ..-. -..ing and managed to make 3 more contacts before the sun came out and I was being paged to go to breakfast. I was rather pleased that one of my early morning contacts was in Oregon. I tried again after breakfast but found that I was di-dahed out, so I went up the hill and enjoyed the finish of Field Day.

I want to thank all of you who guided me through one of the most exciting times of my life. Jim Bradley, who helped in so many ways, Wally for being so patient with me, Joe Love for pulling me through my first contact, and many many more. Things became a big blur to me and I had no idea just who was sitting next to me. But I felt your love and care and I know that I shall never forget that wonderful experience. I didn't make many contacts, but I did make 8 more than those, in any class, who weren't there. I just wish more novices had come out to share in this marvelous experience.

My time for a while is going to be spent in practicing my code and listening to the sounds of CW until I can separate one call from another on the same frequency. I must train my ear to "hear." After all, it won't be long 'til Field Day--73, Laverne, KA4ULZ



BERT'S BEAT

WITH
BERT BAILEY, W4FYN

INTELSAT V********** The latest in the series of commercial commo satellites to relay telephony and TV signals among the member INTELSAT nations. Among the contributors were France, Germany, Italy, Japan and England. As many as 6 of these satellites will be operated at the same time to interconnect over 300 INTELSAT earth terminals. Each sat wull carry up to 12K 2-way telephone circuits and 2 color TV transmissions. Talk about antenna farms, this #V has it!7 antennas providing separate rcv and xmt beams plus an 11GHz beam for gnd tracking and the electronic hardware for operating 27 transponders at the same time. A bit of redundancy may be found, I think, in the total of 43 TWTAs. 27 of these are used in normal ops, 15 receivers with 7 operating normally and 10 upconvertors with 6 normally used. Switching matrices consist of 53 transfer and SPDT coax switches and six hybrid power splittets All this allows interconnection of all beams on a channel-by-channel basis. The transponders--travelling wave TUBES--operate in both the 6/4 and 14/11 GHz bands. They vary in BW from 34 to 241 MHz, providing a total usable BW of 2137 MHz thry 4-fold freq re-use at 6/4 and 2-fold at 14/11. This multiple freq re-use requires control of antenna sidelobe and x-polarization performances. Tests on the efficacy of these "maneuvers" will be one of the objects of the launch. Maybe someday, ARRL will sponsor an INTELSAT DX award. All you have to do is work all the transponders. Much more info on this or these birds can be found in later issues of the Microwave Journal. In the meanwhile, I gotta 73 fer now. Yours for better BIRD hunting.**********

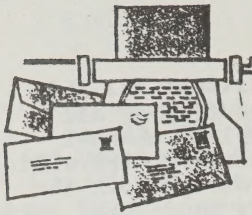
TRAFFIC ANYONE??????????????????? It has always been a puzzle to me why, with all the prodding given eligible originators, more people do not take advantage of the FREE traffic handling by us hams. Some people, of course, look askance at anything free (Yeah, what's the catch?) and others must simply be hermits with no friends, no QSYs outside their own hovels, and, it must be, with absolutely no comprehension of the art of writing, speaking, or any form of QSO. But withal, that still leaves a bunch of people who still never send traffic. Well, I found out over the Easter holidays out at Wake Tech how to overcome this inertia. Get a hold of a pretty gorl of gorls. That does it. Really! We got sucha creature and she, by virtue of lots of drive, enthusiasm, and dedication to "the cause" got many of her classmates to --guess what?--SEND TRAFFIC. How about that? WB4TOP sent out 14 out-of-state, 3 in, and 4 thru the MARS. Fantastic. TU, DeAnn es--may an OM be bold? 88s. (There I said it and I'm glad.) So all you nets, clear the decks for WB4TOP's mucho QNIs.

THE PSALM OF RADIO

Radio is my hobby; I shall want no other.
It maketh me to stay home at night.
It leadeth me into much trouble.
It draweth on my purse.
I go into paths of debt for its names sake.
Yea, though I understand it perfectly, it will not oscillate.
The different kinds of notes; they comfort me.
It will not work in the presence of mine enemies,
I anoint the coils with shellac,
But the tube spilleth over.
Surely the radio bug shall not follow me all the days of my life:
For if it does I shall dwell in the house of poverty forever.

—Author unknown (probably his wishes. Hi!)

(Thanks Poinsettia Amateur Radio Club)



LETTERS TO THE EDITOR

Dear Frank,

I Understand you are looking for information covering 10-10. The enclosed section of the Bulletens will tell you how to get a 10-10 and some awards. If you plan to go farther and collect other certs. on 10 I would suggest that you purchase the "Certificate Guide" from W4YHF, JIm Beswich, Rt 5, Box 77B, Owltown Mt. Ellijay, GA. 30540 for a cost of $3.50. It is well worth it. It includes net times and freqs, names, requirements , upgrades and cert. managers.

Might mention that when you get a 10-10 number, it is yours for life no matter whether or not you keep up membership. You can give others the number as long as you use 10 meters. The bullitens are nice. They keep you up to date on 10 meter activity and usually have pictures of 10-10 members.
I might say that there is nó profit in all of this.

The reason for 10-10 in the first place was to promote activity on 10 meters during the lull time (off years of the sun spot cycle). I am not sure when it started, maybe abt 1975 or 76? I did not get in until 1977 and there were already over 15,000 members. Now there are over 33,000. The 10 or so fellows who thought up the idea (in Calif.) never dreamed so much would come from it. They did a good thing for 10 meters.

There is a backscatter net which meets everyday on 28.825 MHz. for the purpose of collecting 10-10 #'s exchanging certificate numbers, wking new countries or anything pertaining to 10 meters. They are a great bunch of hams. This is a way to have friends all over the world.

I hope I answered your questions.

All the best,
Mary Allen, W4GER

PS. There are two 10-10 Chapters in Raleigh:

"Chapter of Carolinas"
Cert. Mgr. N4AYJ Mike Matzinger
"Sir Walter Raleigh"
Cert Mgr. WD4GXO Rich Rohrer
You might like to talk to them.

Mary.

HOW TO BECOME A TEN-TEN MEMBER

Work ten present members on 10 meters. Log each 10-10 number, call sign, date worked, operator's name and location. Submit this list to your Call Sign Area Manager with $1 Registration Fee and $4 for your first years dues. Novices need not pay Registration Fee and Novices and DX applicants need work but 5 present members. You will receive a Cert. and be assigned a permanent 10-10 Number. You must pay annual dues to remain in good standing, receive the quartly 10-10 International News and participate fully in 10-10 activities.
(The above is an exert from the 10-10 News that was enclosed in Mary's letter.)

Thanks Mary Allen for your lovely and informative letter. I hope it will stimulate new activity on 10 meters. I'll have to start working for my own 10-10 number qualification. Now if only WD4GXO would write an article for the RARS Newsletter on "Sir Walter Raleigh" activities. How abt it?

======Frank, KY4W

Sympathy

We, the members of RARS, wish to extend our deepest sympathy to Lee Johnson, WA4ZNA, and his family. Lee's mother, Geneieve W. Johnson, passed away on April 29. WA4ZNA is a Charter member of our club and a past President - year 1973.

Audrey, WB4ZSM

FOR SALE- HY-GAIN DB24A 40 AND 20 METER BEAM. NEVER INSTALLED. $140. KENWOOD TR 2200. $120. CALL W4TZU 494-5169

MINUTES OF THE MEETING

The regular monthly meeting of the Raleigh Amateur Radio Society was held on May 5 in the West Community Room at Crabtree Valley Mall. After coffee, doughnuts and fellowship, the meeting was called to order by President "Doc" Cobb, WA4YZX, and members and guests were welcomed. The roster was signed by 46 members and 7 guests. Four of the guests became new members after the meeting, including Jason Weaver, KA4ZQU, 11 years old.

Bill Feehan, WB4EOV, gave a report on the 1982 Hamfest. The Hamfest was as successful as last year, financially and otherwise, and the club is now in good shape for the next year.

Doc reminded the members that the Cary Radio Club will operate from the Hatteras Lighthouse site May 29 and 30. Special QSL cards will be issued for this operation.

Doc announced that the Advisory Board decided to make a $50 donation on behalf of RARS to the Durham FM Association for the Triangle Area Callbook they are publishing.

Chuck Littlewood, K4HF, urged all members to attend the League Planning meeting to be held in Raleigh May 22-23. A motion was made, seconded and carried for club funds to be used to pay for items to be given as souveniers at the meeting. The club expects to be reimbursed for this expenditure from registration fees.

Billy Edwards, K4BWC, FM Committe Chairman, lead a discussion of the FM Repeater problems. After a lengthy, pro and con discussion, a motion was made, seconded and carried for the club to invest in a new repeater to be purchased from Aerotron.

Chuck Littlewood announced that, effective immediately, Novice written exams now have 60 days instead of 30 days to be returned to the FCC. Chuck also asked for a round of applause for Lynn Pendleton, K4NYV. Lynn has been Trustee of the club station, W4DW, for the past 5 years and has agreed to serve 5 more years.

A motion was also made, seconded and carried to buy a sound system for the club.

HAMFEST FUSS

by KEN BOGGS KB4RV

My latest and last column in the role of Hamfest Chairman. It has been a good year and our work was sucessful in both dollars as well as the fellowship that common effort allows. It has been quite fullfilling for all, and especially so for me since I could see the whole thing come together.

For those who have never been in the chairman's spot, just what does it take? Well mostly patience and confidence. Patience with self, with inability to do the right thing at the right time. Patience to wait until a job can be done before trying or asking for it to be done. And confidence in people. We have the best in ham radio and the best of that group is active in RARS. I have had very great satisfaction with the response given to my requests for help.

Well, how long is a swan song? This one is about long enough. Next year, I will help and encourage. Most any of us could be a hamfest chairman. It really does not take alot of time or smartness. Even a "turkey" has been able to do it.

Thanks for encouraging me. Thanks for doing what needed doing. And lets all turn our attention to next year and a new chairman. 73's Ken

Minutes (Cont.)

Doc expressed thanks to Bob Johnson, AA4L, Frank Weiss, KY4W, and Herb Lacey, N4UE, for their continued support and teaching of the Novice and Upgrade classes.

The door prize, a 1982 Handbook, was won by Ken Boggs, KB4RV.

The program for the evening was a slide presentation, "The Ups and Downs of Antennas," with appropriate and entertaining comments by Frank Weiss. After this most enjoyable and informative program, the meeting was adjourned.

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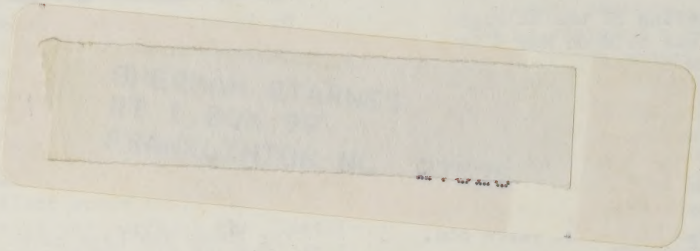

RARS meets each first Wednesday at 7:30 p.m. in the West Community Room of Crabtree Valley Mall.

Calendar

May 29,30 - Cape Hatteras Special Op. Event - See May RARS News

May 30 - Roanoke, Va. Hamfest

June 2 - Regular RARS Meeting

June 6 - Manassas, Va. Hamfest

June 9 - FCC Exams, Greensboro, NC

June 10 - RARS News copy deadline

June 12, 13 - ARRL VHF QSO Party

June 12, 13 - Atlanta, Ga. Hamfest

June 16 - RARS Advisory Board Mtg.

June 19, 20 - All Asia DX Contest

June 26, 27 - ARRL Annual Field Da

July 17 - Cary Swapfest